Fuel alternatives would be premium

By Rush Holt

The United States' dependence on petroleum has been a problem for decades. With most of the world's reservoirs of cheap oil concentrated in the Middle East, we are vulnerable to supply shortages, price spikes, balance of payments problems, and the volatile politics of the Middle East. High gasoline prices are only the latest manifestation of the economics and politics of oil.

Petroleum is not our only energy problem. Coal, natural gas and petroleum release greenhouse gases that affect the climate. As we continue to burn fossil fuels, the climate will change in ways that we can't fully predict, potentially altering the sea level and wreaking havoc with weather patterns. The desirability of finding alternatives to petroleum and other fossil fuels is now almost universally accepted.

The United States has an energy research program, but it is too small. Even worse, investments are concentrated for a few years in one technology, then for a few years in something else. The United States has heavily funded shale oil, then cut funding off, heavily funded solar energy, then cut funding off, heavily funded electric vehicles, then cut funding off, and is now heavily funding hydrogen fuel-cell vehicle research. All of these technologies hold promise. But none can flourish with only short bursts of funding. The United States needs a significant and sustained energy research program. We need to invest in the full range of promising energy technologies.

Fusion is an important example of how penny-pinching and short-term thinking have held our country back. Fusion has the advantages of nuclear (fission) power - abundant electricity with no greenhouse gas emissions. But unlike nuclear power, there is no potential to make nuclear weapons, and fusion energy would produce no long-lived radioactive waste.

In the 1980s, scientists planned to build a major fusion experiment in the 1990s and a demonstration fusion reactor in the 2000s. But funding for fusion was cut. Instead of the 1990s, the major fusion experiment, the International Thermonuclear Experimental Reactor (ITER) is now slated to start in 2015, and the demonstration reactor has been pushed back to 2035.

Despite the funding cuts, fusion has made significant progress in the past three decades. There is a better understanding of the elements that are essential to operating a fusion power plant.

Other countries have now taken the lead in fusion research. France will build the ITER with Japan as a major partner. The United States, once the leader, will collaborate at the 10 percent level.

We need a strong program in fusion research. Some have advocated cutting the domestic U.S. fusion program and using the funds for ITER instead. This would truly reduce the United States to a bit player in fusion energy. We need to use ITER to benefit our own fusion program, and, if ITER is successful, build a demonstration fusion power plant in the United States.

Fusion is, of course, just one of the energy technologies that need sustained long-term research. We need a significant effort on renewable energy. We need to pursue safe approaches to nuclear energy. We need to experiment with ways to capture and store the carbon emissions from fossil fuels. And we need to invent new technologies that use less energy.

A doubling of energy research, sustained as a national commitment over decades, could minimize our dependence on petroleum from the Middle East, keep the climate stable, and provide an entirely new basis for U.S. industrial leadership. It's an investment that would pay us back many times over.